

### **REMARKS/ARGUMENTS**

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 2, 3 and 5-10 are presently active in this case.

In the outstanding Office Action, Claims 2-3 and 5-10 were rejected under 35 U.S.C. § 102(e) as anticipated by Ohashi et al. (U.S. Patent No. 6,261,708, herein referred as “Ohashi”).

First, Applicants wish to thank the Examiner Rhee for the courtesy of an interview granted to Applicants' representatives on July 16, 2004, at which time the outstanding issues in this case were discussed. Specifically, during the interview Applicants' representatives presented comments as to how the claims differed from the applied art; namely that the applied art to Ohashi did not disclose a substrate with the claimed “leakage quantity,” but only disclosed a leakage quantity at a joined portion with a substrate, not of the substrate itself. The Examiner indicated she would further consider such comments when submitted in a filed response.

Briefly recapitulating, the claimed invention relates to a ceramic substrate used mainly in the semiconductor industry, being excellent in temperature rising/falling property in the case of application to a heater.<sup>1</sup> The present applicants recognized that problems of deterioration of temperature rising/falling property can be solved by adjusting the degree of the sintering of a substrate to lower the leakage quantity to  $10^{-7}$  Pa · m<sup>3</sup> or less.<sup>2</sup>

Turning now to the applied prior art, the Ohashi patent discloses a method for joining substrates of a simple shape made of aluminum nitride ceramics<sup>3</sup> to obtain a part or an

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<sup>1</sup> See in Applicants' specification on page 1, lines 5-12.

<sup>2</sup> See in Applicants' specification on page 2, lines 13-21.

<sup>3</sup> See Ohashi in the Abstract.

element of a complicated shape.<sup>4</sup> However, Ohashi fails to teach a ceramic heater comprising an aluminum nitride ceramic substrate having a leakage quantity of  $1 \times 10^{-10}$  to  $1 \times 10^{-7}$  Pa · m<sup>3</sup>/sec, as recited in the claims. On the contrary, Ohashi explicitly teaches a method of joining substrates made of aluminum nitride series ceramics to each other,<sup>5</sup> and which provides a strong joining.<sup>6</sup> Ohashi further states that “disc shaped substrates of a diameter  $\phi$  of 50 mm x a thickness of 15 mm were joined to cylindrical shaped substrates of an outer diameter of 36 mm, an inner diameter of 28 mm,”<sup>7</sup> and then states that the “thus obtained joined bodies were subjected to a He leakage test.”<sup>8</sup> The obtained joined body subjected to a leakage test, as recited in Ohashi, is not only a ceramic substrate.

That is, Applicants submit that in Ohashi the noted “leakage property” is directed to that of the joined body portion, and is not a leakage quantity of only the substrate itself. In contrast to Ohashi, in the claims as currently written, the “leakage quantity” is directed to that of the substrate itself, and not to a joined portion between a substrate and a support.

The leakage quantity of the ceramic substrate itself is measured as follows:<sup>9</sup> The ceramic substrate which has a diameter of 30mm, an area of 706.5mm<sup>2</sup> and a thickness of 1mm is prepared and put into the helium leakage detector. The leakage quantity of the ceramic substrate then measured by measuring a flow amount of helium passing through the ceramic substrate. The helium leakage detector measures the partial pressure of helium at the time of the leakage, but does not measure the absolute value of the gas flow amount. The partial pressure values of Helium of known leakage quantities are measured in advance, and based on the detected partial pressure of Helium at the time of unknown leakage, the leakage

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<sup>4</sup> See Ohashi at column 1, lines 44-48.

<sup>5</sup> See Ohashi at column 2, lines 28-33.

<sup>6</sup> See Ohashi at column 2, lines 35-36.

<sup>7</sup> See Ohashi at column 10, lines 51-54.

<sup>8</sup> See Ohashi at column 10, lines 55-56.

<sup>9</sup> See our applicants' specification for example on page 5, lines 2-18.

quantity is calculated by a simple proportional calculation. More details on this measurement principle of the helium leakage detector is described in the enclosed article: Semiconductor World, November 1992, pages 112 to 115.

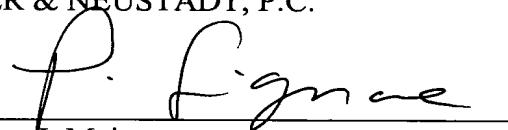
Therefore, Ohashi fails to teach or suggest every feature recited in claims 2-3 and 5-10, so that Claims 2-3 and 5-10 are patentably distinct over Ohashi. Accordingly, Applicants respectfully traverse, and request reconsideration of, the rejections based on Ohashi.<sup>10</sup>

Consequently, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 2-3 and 5-10 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicant's undersigned representative at the below listed telephone number.

Respectfully submitted,

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<sup>10</sup> See MPEP 2131: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference," (Citations omitted) (emphasis added). See also MPEP 2143.03: "All words in a claim must be considered in judging the patentability of that claim against the prior art."